

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1-25. (Cancelled)

26. (Currently Amended) An apparatus for presenting a highly spatially accurate visualization of a scene from which measurements can be taken, the apparatus comprising:

at least one camera ~~for recording~~that records a plurality of frames of video images of the scene;

at least one sensor mounted in relation to the camera ~~for recording~~so as to record sensor data on positional characteristics of the at least one camera as the at least one camera is moved with respect to the scene; and

an image processing means~~processor~~, including:

a first module ~~for synchronizing the frames with the sensor data to form~~that uses the recorded sensor data to compensate for an effect of the positional characteristics of the camera on the frames and provide corrected frames; and

a second module ~~for constructing~~that constructs an accurate mosaic from the corrected frames.

27. (Previously Presented) The apparatus as claimed in Claim 26, wherein the at least one camera is a video camera capturing two dimensional digital images.

28. (Previously Presented) The apparatus as claimed in Claim 26, wherein the at least one sensor comprises a sensor capable of making a positional measurement.

29. (Previously Presented) The apparatus as claimed in Claim 28, wherein the at least one sensor comprises a digital compass.

30. (Currently Amended) The apparatus as claimed in Claim 28, wherein the at least one sensor comprises an altimeter ~~and/or bathymetric sensor.~~

31. (Previously Presented) The apparatus as claimed in Claim 26, wherein the at least one camera and the at least one sensor are mounted on a moving platform.

32. (Previously Presented) The apparatus as claimed in Claim 26, wherein the apparatus further includes a calibration system from which the at least one camera is calibrated.

33. (Previously Presented) The apparatus as claimed in Claim 26, wherein the first module performs a perspective correction to the images using the sensor data.

34. (Previously Presented) The apparatus as claimed in Claim 26, wherein the second module accomplishes video mosaicing via a correlation technique based on frequency contents of the images being compared.

35. (Previously Presented) The apparatus as claimed in Claim 26, wherein the apparatus further includes display means for providing a visual image of the mosaic.

36. (Previously Presented) The apparatus as claimed in Claim 26, wherein the apparatus further comprises data storage means to allow the mosaic to be stored.

37. (Previously Presented) The apparatus as claimed in Claim 26, wherein the apparatus includes a graphic user interface (GUI).

38. (Currently Amended) A method for presenting a highly spatially accurate visualization of a scene from which measurements can be taken, the method comprising:

(a) recording a plurality of frames of video images of the scene ~~from~~ using a camera;

(b) recording sensor data on positional characteristics of the camera as the camera is moved with respect to the scene;

(c) ~~synchronizing the frames with the sensor data~~using the sensor data to compensate for the effect of the positional characteristics of the camera on the frames to form corrected frames; and

(d) constructing an accurate mosaic from the corrected frames.

39. (Currently Amended) The method as claimed in Claim 38, wherein the method includes ~~a step of~~ calibrating the camera prior to performing step (a).

40. (Currently Amended) The method as claimed in Claim 38, wherein ~~the synchronization step (c)~~ includes ~~the step of~~ performing a perspective correction to the images using the sensor data.

41. (Currently Amended) The method as claimed in Claim 38, wherein ~~the step of video mosaicing is achieved~~ (d) comprises using a correlation technique based on frequency contents of ~~the~~ images being compared.

42. (Currently Amended) The method as claimed in Claim 38, ~~wherein the method further includes the step of~~ further comprising providing a visual image of the mosaic constructed from the corrected frames.

43. (Currently Amended) The method as claimed in Claim 38, ~~wherein the method further includes the step of~~further comprising taking a measurement from the ~~visual image~~scene.

44. (Currently Amended) The method as claimed in Claim 38, ~~wherein the method includes the step of~~further comprising storing the ~~images~~corrected frames so that they may be accessed by spatial position.

45. (Currently Amended) A method of performing a survey in a fluid, the method comprising:

(a) mounting a camera and a plurality of sensors on a platform capable of movement in the fluid;

(b) moving the platform through the fluid while recording visual images on the camera and recording sensor data relating to the attitude and distance of the platform from objects of interest within the fluid;

(c) ~~synchronizing the visual images to the sensor data to provide~~using the sensor data to compensate for changes in attitude and distance on the frames and providing corrected visual images relating to a fixed distance and attitude; and

(d) video mosaicing the images to form an accurate video mosaic as a visual image of the scene surveyed.

46. (Currently Amended) The method as claimed in Claim 45, ~~wherein the method includes the step of further comprising~~ pre-calibrating the camera to compensate for distorting artifacts inherent within the camera.

47. (Currently Amended) The method as claimed in Claim 45, ~~wherein the method includes the step of further comprising~~ displaying the visual image.

48. (Currently Amended) The method as claimed in Claim 45, ~~wherein the method includes the step of further comprising~~ taking a measurement from the visual image.

49. (Previously Presented) The method as claimed in Claim 45, wherein the platform is mounted on a remotely operated vehicle (ROV).

50. (Currently Amended) The method as claimed in Claim 45, ~~wherein the method includes the step of further comprising~~ storing the mosaiced images for viewing later.

51. (New) The apparatus as claimed in claim 28, wherein the at least one sensor comprises a bathymetric sensor.